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AUTHORS: Dubinin, N. P., Arsen'yeva, M. A., Kalyayeva, E. S., Ma Hsui-ch'uang and Wang Ang-ch'ih

TITLE: The protective effect of cysteamine (^β-mercaptoethylamine) on chromosome reorganization in the tissues of monkeys and mice

SOURCE: Radiatsionnaya genetika; sbornik rabot. Otd. biol. nauk AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 287-299

TEXT: The effect of cysteamine in protecting from x ray damage bone marrow and germinal epithelial cell nuclei was studied at the first order spermatocyte stage in mice and monkeys (Macaca mulatta). 2 - 3 months old mice, 25 - 30 g in weight and of the Kun'-minsky line, were given 3 mg/150 mg/kg cysteamine intraabdominally, 10 minutes before irradiation with single doses of 200, 400 and 600 r, at 11.5 r/min. The mice were killed 1, 2, 5 and 10 days later and the testicles and a section of the femur were removed for analysis. Sexually mature, 6 - 8-year old monkeys received 3 mg/

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The protective effect ...

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100 mg/kg cysteamine 10 minutes before irradiation with 200-r doses, were castrated 24 hours later, and a section of a rib was removed. Controls have the second testicle and a second rib removed on the 10th day. In mice, cysteamine protected the germinal epithelial and bone marrow cells to an average extent of 42.75 and 50.77% respectively, as compared with controls, and in monkeys, to 52.4 and 50.8%. The monkeys' germinal epithelial cells were much more radiosensitive than those of mice. The latter showed no difference in effect in pachytene and diplotene. The level of protection obtained in these experiments was exceptionally high, 50% as compared with the 30% obtained by Devik and Lothe. The two results are not, however, strictly comparable. Kimball's theory that radiation-protection is not linked solely to removal of the oxygen effect is supported. In both organs, cysteamine protects against chromosome reorganization but not against chromosome adhesion, which indicates that it acts by forming DNA-cysteamine complexes. There are 4 figures and 5 tables.

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